Phytoplankton Productivity in the Vicinity of a Front S.W. of the Azores during May 1981

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Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

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Canadian Data Report
Fisheries and Aquatic Sciences No. 400

PHYTOPLANKTON PRODUCTIVITY IN THE VICINITY OF A FRONT S.W. OF THE AZORES DURING MAY 1981

by

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ABSTRACT

Irwin, B., T. Platt, P. Lindley, M.J. Fasham and K. Jones. 1983. Phytoplankton productivity in the vicinity of a front, S.W. of the Azores during May 1981. Can. Data Rept. Fish. Aquat. Sci. No. 400: 101 p.

During the period May 9 to May 30, 1981, a series of primary production experiments and related nutrient measurements were made on RRS Discovery in the vicinity of a front SW of the Azores. In this report we make available the raw data and the fitted light saturation parameters.

RÉSUMÉ

Irwin, B., T. Platt, P. Lindley, M.J. Fasham and K. Jones. 1983. Phytoplankton productivity in the vicinity of a front, S.W. of the Azores during May 1981. Can. Data Rept. Fish. Aquat. Sci. No. 400: 101 p.

Durant la période du 9 mai au 30 mai 1981, des séries d'expériences sur la determination de la production primaire et des sels nutritifs furent réalisées au bord du RRS Discovery du côte d'un front à S.O. des Azores. Nous présentons dans ce rapport les données brutes sur ces expériences, ainsi que les paramètres qui furent calculées pour représenter les courbes de production en fonction de la lumière.

This is the first in a series of data reports presenting the results of photosynthesis experiments on natural phytoplankton populations in the oligotrophic sub-tropical waters of the North Atlantic. In this study, water samples were collected from RRS Discovery in the vicinity of a front, SW of the Azores. This front separates East Atlantic from West Atlantic waters.

This was a joint effort between the Biological Oceanography Division of the Marine Ecology Laboratory, IOS, Wormley, England and SMBA, Dunstaffenage Marine Laboratory, Oban, Scotland.

In this report we make available the results of these experiments, the fitted light saturation parameters and their confidence intervals to the light saturation curves, and the values of some relevant biomass and nutrient concentrations.

Sampling

Water samples for light saturation experiments were collected with 30 ℓ niskin bottles or from the non-toxic pumped sea water supply in the ship's laboratory. The majority of the samples were collected from the chlorophyll maximum layer which was located between 40 and 110 m below the surface. The depth of the chlorophyll maximum was determined by in situ fluorometry (Aquatraka, Chelsea Environmental Instruments Ltd.). The fluorometer was mounted on a rosette sampler and lowered into the region of maximum fluorescence. 30 ℓ niskin bottles were then used to collect water samples from that depth.

1.8 ℓ Niskin bottles fitted with reversing thermometer racks were used to collect samples from standard oceanographic depths for chlorophyll, salinity, temperature and nitrate concentrations.

Size Fractionation

Most samples collected for light saturation experiments were separated into two size fractions. The whole fraction was collected by filtering unscreened water onto Whatman GF/F filters. The picoplankton fraction (<1µm size) was that fraction of the whole population that passed through a 1.0µm nuclepore filter at a negative pressure of 10 K pa. and was collected on a Whatman GF/F filter.

METHODS

Primary Productivity

The ^{14}C method as described in Strickland and Parsons (1972) was used. Sufficient sodium bicarbonate ^{14}C was added to 6-8 liters of water to yield an activity of 10-15 µ ci per 100 mls of sample. 100 ml aliquots were then measured into 125 ml pyrex bottles. A total of 120 light and 8 dark bottles were filled for each experiment. 30 light and 2 dark bottles were placed into each incubation chamber. The temperature of each incubation chamber was controlled by pumping water from a temperature controlled water bath (Forma Scientific Model 2160). Illumination was provided by 2000 watt tungsten-halogen lamps (New Haline OHS 2000).

All samples were kept in the dark at incubation temperature for one hour prior to lights being switched on. Incubations were terminated after 3 hours and samples were immediately filtered then stored at -20°C for later counting in a scintillation counter.

In experiments where two size fractions were examined, 15 light and 1 dark bottle from each size class was placed in each incubator.

Organic Particulates

Samples for organic particulates were collected and analyzed as described in Irwin et al. (1982). All samples except chlorophylls for profile stations were frozen at -20°C and later analyzed in the laboratory. Profile chlorophylls were analyzed immediately after collection.

Nutrients

Profile nitrates were measured manually on board ship using the method described by Strickland and Parsons (1972). All other nutrients were stored at -20°C for later analysis using methods described in Irwin et al. (1982).

Photosynthetic Parameters

Measurements of specific production, P^B, and irradiance, I, were used to estimate the parameters in the equation

$$P^B = P_s(1 - e^{-\alpha I/P_s})e^{-\beta I/P_s}$$

(Platt et al., 1981) where P_s (Mg c mg $chl^{-1}h^{-1}$) is the light saturated rate of specific production in the absence of photoinhibition, α(mg c [mg chl a]$^{-1}h^{-1}w^{-1}m^{-2}$) is the initial slope of the P-I curve and β (same units as α) is a parameter that characterizes the photoinhibition. A complete discussion of the fitting routine and its mathematical basis is given in Irwin et al., 1980.

ACKNOWLEDGEMENTS

We wish to thank Dave Rudderham and Carla Caverhill for their assistance in the calculation of the light saturation parameters.

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TEMPERATURE, SALINITY, CHLOROPHYLL AND NUTRIENT PROFILES

DISCOVERY 1981

LATITUDE: 34°59.67'N LONGITUDE : 28°33.1'W

DATE: 10:05:81 STATION NO.: 10357

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	17.86	36.22	0.04	0.02	0.47
50	17.57	36.27	0.10	0.09	0.49
75	17.10	36.21	0.25	0.45	1.38
95	16.90	36.19	0.24	0.22	0.84
100	16.72	36.17	0.10	0.09	4.35
150	15.96	36.07	0.04	0.04	1.86
200	14.88	35.97	0.00	0.01	10.16
300	13.24	35.78	0.00	0.01	8.56

LATITUDE: 32°44.4'N LONGITUDE : 29°46'W

DATE: 11:05:81 STATION NO.: 10358

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	19.04	36.54	0.04	0.01	0.00
50	18.87	36.54	0.06	0.03	0.07
75	18.83	36.54	0.11	0.04	0.00
100	18.67	36.54	0.19	0.10	0.12
130	18.47	36.54	0.16	0.11	2.44
175	17.95	36.52	0.07	0.04	0.80
200	17.15	36.37	0.00	0.01	6.60
250	16.42	36.25	0.00	0.01	7.21

DISCOVERY 1981

LATITUDE: 31°08.53'N LONGITUDE : 29°48.4'W

DATE: 12:05:81 STATION NO.: 10359

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	19.34	36.56	0.05	0.01	0.17
50	18.88	36.52	0.08	0.01	0.00
75	18.59	36.52	0.13	0.01	0.10
90	18.46	36.52	0.19	0.19	0.02
115	18.40	36.52	0.25	0.17	0.54
130	18.39	36.52	0.09	0.04	0.33
200	17.39	36.37	0.01	0.01	3.39
300	16.37	36.27	0.00	0.00	6.71

LATITUDE: 33°03'N LONGITUDE : 34°24.5'W

DATE: 14:05:81 STATION NO.: 10360

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	19.12	36.47	0.05	0.02	0.99
60	19.07	36.47	0.06	0.02	0.90
80	18.92	36.46	0.11	0.04	0.57
100	18.41	36.45	0.18	0.11	0.68
125	18.24	36.43	0.27	0.25	0.73
175	17.94	36.40	0.06	0.04	2.00
225	17.47	36.26	0.01	0.02	4.10
300	16.56	36.21	0.00	0.02	4.80

DISCOVERY 1981

LATITUDE: 33°33.6'N LONGITUDE : 33°32.1'W

DATE: 15:05:81 STATION NO.: 10362

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	17.91	36.26	0.11	0.05	1.14
40	17.78	36.28	0.16	0.08	1.81
50	17.77	36.28	0.08	0.22	1.06
56	17.47	36.34	0.24	0.12	3.16
60	17.73	36.34	0.54	0.27	1.03
70	17.25	36.29	0.36	0.26	0.42
80	17.02	36.26	0.28	0.11	3.69
90	16.97	36.26	0.19	0.09	2.93
100	16.16	36.12	0.08	0.11	3.11
125	16.16	36.12	0.05	0.05	3.68
150	16.06	36.15	0.02	0.04	5.16
175	15.69	36.11	0.00	0.01	6.44
200	15.29	36.04	0.00	0.02	7.32
250	15.03	36.03	0.00	0.02	8.16
300	14.43	35.94	0.00	0.02	9.09

LATITUDE: 34°00.1'N LONGITUDE : 32°49.9'W

DATE: 16:05:81 STATION NO.: 10364

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	18.42	36.39	0.05	0.04	0.11
30	18.40	36.38	0.07	0.04	0.22
40	18.14	36.36	0.15	0.14	0.17
50	17.23	36.25	0.35	0.39	0.37
70	16.70	36.17	0.53	0.50	2.18
80	16.62	36.17	0.13	0.15	2.51
90	16.66	36.19	0.15	0.11	3.00
100	16.54	36.18	0.08	0.10	3.30
125	16.62	36.25	0.02	0.04	6.07
150	16.09	36.15	0.01	0.03	5.44
175	15.75	36.09	0.00	0.02	6.89
200	15.04	36.01	0.00	0.02	8.61
225	14.67	35.97	0.00	0.02	9.27
250	14.27	35.92	0.00	0.03	10.70
275	14.05	35.89	0.00	0.02	10.19
300	13.71	35.84	0.00	0.02	12.12

DISCOVERY 1981

LATITUDE: 33°31.9'N LONGITUDE : 33°32.3'W

DATE: 16:05:81 STATION NO.: 10365

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
20	18.37	36.37	0.06	0.02	0.24
40	17.99	36.30	0.09	0.08	0.27
50	17.76	36.26	0.08	0.04	0.25
60	17.62	36.36	0.25	0.19	2.26
75	17.37	36.32	0.13	0.07	2.84
100	17.05	36.27	0.05	0.03	2.36
160	16.67	36.25	0.02	0.03	5.18
300	14.85	36.00	0.00	0.01	9.58

LATITUDE: 32°07.2'N LONGITUDE : 27°57.8'W

DATE: 20:05:81 STATION NO.: 10368

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	18.63	36.39	0.04	0.02	0.03
50	18.60	36.37	0.04	0.01	0.08
75	18.08	36.33	0.06	0.03	0.10
100	17.36	36.23	0.14	0.14	0.11
120	17.21	36.22	0.25	0.40	0.57
140	16.76	36.17	0.11	0.15	1.94
200	15.49	36.07	0.00	0.02	7.02
300	13.26	35.79	0.00	0.01	12.70

DISCOVERY 1981

LATITUDE: 32°23.1'N LONGITUDE : 33°31.2'W

DATE: 22:05:81 STATION NO.: 10371

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
10	19.06	36.26	0.08	0.02	0.19
40	18.18	36.32	0.07	0.02	0.71
80	17.94	36.33	0.30	0.12	0.85
100	17.69	36.33	0.24	0.21	1.55
110	17.47	36.34	0.09	0.07	3.51
160	17.15	36.35	0.04	0.01	5.46
180	17.16	36.35	0.00	0.01	5.52
300	15.38	36.08	0.00	0.01	10.28

LATITUDE: 35°21.7'N LONGITUDE : 35°28.6'W

DATE: 24:05:81 STATION NO.: 10373

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
25	17.46	36.13	0.15	0.03	0.15
50	17.22	36.12	0.22	0.05	0.22
70	16.74	36.07	0.26	0.17	0.20
85	16.69	36.12	0.29	0.21	0.68
110	16.34	36.12	0.16	0.11	2.44
150	15.98	36.10	0.05	0.05	3.39
200	15.08	35.98	0.01	0.03	6.90
300	13.89	35.86	0.00	0.01	10.71

DISCOVERY 1981

LATITUDE: 33°34.2'N LONGITUDE : 33°28'W

DATE: 26:05:81 STATION NO.: 10376

DEPTH M	TEMPERATURE °C	SALINITY °/..	CHLOROPHYLL mgm^{-3}	PHAEOPHYTIN mgm^{-3}	NITRATE $mgatm^{-3}$
15	19.86	36.62	0.04	0.02	0.03
35	18.86	36.54	0.11	0.05	0.09
45	18.32	36.48	0.54	0.27	0.62
60	17.93	36.45	0.07	0.35	2.95
90	17.45	36.38	0.06	0.05	3.73
160	16.88	36.30	0.00	0.01	4.06
240	15.76	35.15	0.00	0.01	6.94
300	14.83	36.00	0.00	0.01	18.34

LIGHT SATURATION DATA AND RELATED BIOMASS AND NUTRIENT MEASUREMENTS

Units

P = mg C $m^{-3} h^{-1} (mg\ Chl)^{-1}$

I = W m^{-2}

P_s = mg C mg $Chl^{-1} h^{-1}$

α = mg $C(mg\ Chl)^{-1} h^{-1} W^{-1} m^{-2}$

β = mg $C(mg\ Chl)^{-1} h^{-1} W^{-1} m^{-2}$

Organic particulate concentrations are in mg m^{-3} and nutrients are in mg at m^{-3}. The 90% confidence interval for P_s, α and β are shown in the closed brackets below the estimates for each parameter.

DISCOVERY 1981

LAT 34 59.7'N LONG 28 33.1'W STATION NO. 10357
DATE 10/05/81 DEPTH 75 M

I	P	I	P	I	P	I	P
791	.04	740	.14	587	.14	493	.17
472	.34	234	.27	189	.34	164	.41
113	.33	81	.37	25	.36	24	.36
17	.37	8	.34				

PARAMETER VALUES

PS :	.39	ALPHA :	-	BETA :	.0005
(.37,	.42)	(- ,	-)	(.0004,	.0007)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 13.8 C

CHLOROPHYLL :	.59	RNA :	3.37	AMMONIA :	.29
CARBON :	88	DNA :	4.47	NITRATE :	2.70
NITROGEN :	27	PROTEIN:	15.72	SILICATE :	1.03

DISCOVERY 1981

LAT 34 59.7'N LONG 28 33.1'W STATION NO. 10357
DATE 10/05/81 DEPTH 75 M

I	P	I	P	I	P	I	P
822	.25	740	.18	575	.28	559	.17
472	.36	431	.22	230	.39	176	.46
166	.54	137	.51	108	.69	84	.67
69	.70	32	.52	19	.44	16	.40
13	.41	7	.20	7	.29		

PARAMETER VALUES

PS : .75 ALPHA : .039 BETA : .0015

(.70, .81) (.034, .044) (.0012, .0018)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 16.5 C

CHLOROPHYLL	.59	RNA	3.37	AMMONIA	.29
CARBON	88	DNA	4.47	NITRATE	2.70
NITROGEN	27	PROTEIN	15.72	SILICATE	1.03

DISCOVERY 1981

LAT 34 59.7'N LONG 28 33.1'W STATION NO. 10357
DATE 10/05/81 DEPTH 75 M

I	P	I	P	I	P	I	P
838	.14	789	.12	727	.21	637	.21
575	.15	419	.20	374	.23	263	.21
201	.31	180	.36	143	.33	125	.32
98	.40	88	.38	76	.42	39	.42
26	.32	23	.34	15	.27	13	.15
8	.14	5	.10	5	.12		

PARAMETER VALUES

PS : .44 ALPHA : .024 BETA : .0007

(.41, .46) (.021, .027) (.0006, .0008)

SAMPLE TEMPERATURE 16.0 C INCUBATION TEMPERATURE 23.5 C

CHLOROPHYLL :	.59	RNA :	3.37	AMMONIA :	.29
CARBON :	88	DNA :	4.47	NITRATE :	2.70
NITROGEN :	27	PROTEIN:	15.72	SILICATE :	1.03

DISCOVERY 1981

LAT 34 59.7'N LONG 28 33.1'W STATION NO. 10357
DATE 10/05/81 DEPTH 75 M

I	P	I	P	I	P	I	P
842	.19	637	.30	616	.19	493	.24
485	.27	281	.29	238	.38	185	.36
152	.43	135	.42	108	.42	94	.49
85	.52	58	.42	53	.41	33	.43
25	.32	21	.33	13	.19	13	.31
8	.20	8	.16				

PARAMETER VALUES

PS : .51	ALPHA : .025	BETA : .0007
(.48, .54)	(.022, .028)	(.0005, .0008)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.3 C

CHLOROPHYLL :	.59	RNA :	3.37	AMMONIA :	.29
CARBON :	88	DNA :	4.47	NITRATE :	2.70
NITROGEN :	27	PROTEIN:	15.72	SILICATE :	1.03

DISCOVERY 1981

LAT 32 44.4'N LONG 29 45.0'W STATION NO. 10358
DATE 11/05/81 DEPTH 100 M

T	P	T	P	T	P	T	P
863	.14	781	.16	740	.12	472	.17
234	.18	149	.21	164	.17	152	.22
113	.19	113	.26	81	.28	78	.26
47	.22	43	.25	25	.29	24	.25
17	.23	17	.13	8	.06	8	.17
4	.09						

PARAMETER VALUES

PS : .25 ALPHA : .023 BETA : .0002

(.24, .27) (.018, .028) (.0001, .0003)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 14.9 C

CHLOROPHYLL	: .45	RNA	: .64	AMMONIA	: .32
CARBON	: 181	DNA	: 2.61	NITRATE	: .31
NITROGEN	: 21	PROTEIN	: 12.63	SILICATE	: 1.15

DISCOVERY 1981

LAT 32 44.4'N LONG 29 46.0'W STATION NO. 10359
DATE 11/05/81 DEPTH 100 M

T	P	T	P	T	P	T	P
822	.06	740	.06	575	.05	559	.09
472	.04	431	.08	230	.07	176	.11
166	.06	137	.07	108	.09	84	.07
69	.11	39	.11	19	.10	16	.10
13	.09	7	.09	7	.08	5	.03
4	.04						

PARAMETER VALUES

PS : .10 ALPHA : .017 BETA : .0001

(.09, .11) (.013, .022) (.0001, .0001)

SAMPLE TEMPERATURE 19.6 C INCUBATION TEMPERATURE 27.2 C

CHLOROPHYLL	: .45	RNA	: .64	AMMONIA	: .32
CARBON	: 181	DNA	: 2.61	NITRATE	: .31
NITROGEN	: 21	PROTEIN:	12.63	SILICATE	: 1.15

DISCOVERY 1981

LAT 22 44.4'N LONG 29 45.0'W STATION NO. 10359
DATE 11/05/81 DEPTH 100 M

I	P	I	P	I	P	I	P
838	.04	789	.00	727	.06	637	.08
616	.06	575	.07	419	.11	374	.08
201	.12	180	.11	143	.10	125	.10
98	.16	88	.13	47	.15	39	.16
26	.10	23	.09	15	.12	13	.07
8	.09	6	.06	5	.08	5	.08

PARAMETER VALUES

PS : .15	ALPHA : .012	BETA : .0002
(.14, .16)	(.010, .015)	(.0002, .0003)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 24.5 C

CHLOROPHYLL :	.45	RNA :	.64	AMMONIA :	.32
CARBON :	181	DNA :	2.61	NITRATE :	.31
NITROGEN :	21	PROTEIN:	12.63	SILICATE :	1.15

DISCOVERY 1981

LAT 32 44.4'N LONG 29 46.0'W STATION NO. 10358
DATE 11/05/81 DEPTH 100 M

I	P	I	P	I	P	I	P
962	.06	904	.05	842	.04	645	.06
637	.09	616	.06	493	.08	485	.09
281	.14	238	.12	185	.15	152	.17
135	.18	108	.19	94	.15	85	.16
58	.18	53	.17	38	.16	33	.18
25	.16	13	.14	13	.17	8	.13

PARAMETER VALUES

PS : .18 ALPHA : - BETA : .0002

(.17, .18) (- , -) (.0002, .0003)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 20.8 C

CHLOROPHYLL	.45	RNA	.64	AMMONIA	.32
CARBON	181	DNA	2.61	NITRATE	.31
NITROGEN	21	PROTEIN	12.63	SILICATE	1.15

DISCOVERY 1981

LAT 31 08.5'N LONG 29 48.4'W STATION NO. 10359
DATE 12/05/81 DEPTH 30 M

T	P	T	P	I	P	I	P
962	.00	904	.09	842	.22	645	.42
616	.53	493	.31	485	.56	281	.42
185	.40	152	.53	108	.61	94	.58
58	.36	53	.56	38	.56	33	.35
25	.38	21	.48	13	.24	13	.21
8	.40	8	.11				

PARAMETER VALUES

PS : .62 ALPHA : .027 BETA : .0007

(.54, .71) (.020, .033) (.0004, .0010)

SAMPLE TEMPERATURE 20.0 C INCUBATION TEMPERATURE 21.0 C

CHLOROPHYLL	.06	RNA	.80	AMMONIA	.26
CARBON	146	DNA	2.46	NITRATE	.13
NITROGEN	19	PROTEIN	21.95	SILICATE	1.22

DISCOVERY 1981

LAT 31 08.5'N LONG 29 48.4'W STATION NO. 10359
DATE 12/05/81 DEPTH 75 M

I	P	I	P	I	P	I	P
822	.06	740	.08	575	.09	559	.06
472	.11	431	.13	230	.18	176	.23
166	.21	108	.22	84	.24	39	.21
32	.23	21	.22	16	.16	13	.19
7	.14	7	.18	5	.06	4	.06

PARAMETER VALUES

PS : .27 ALPHA : .022 BETA : .0005

(.25, .29) (.019, .025) (.0004, .0006)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 19.8 C

CHLOROPHYLL	.44	RNA	1.84	AMMONIA	.36
CARBON	132	DNA	3.10	NITRATE	.11
NITROGEN	26	PROTEIN	15.15	SILICATE	.94

DISCOVERY 1981

LAT 31 08.5'N LONG 29 48.4'W STATION NO. 10359
DATE 12/05/81 DEPTH 90 M

I	P	I	P	I	P	I	P
963	.03	781	.08	740	.08	587	.10
493	.11	472	.10	234	.16	189	.21
164	.17	152	.21	113	.17	113	.22
81	.26	78	.23	43	.27	25	.21
24	.25	17	.20	17	.17	8	.14
8	.17	4	.10	4	.12		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.27	.025	.0005
(.25, .28)	(.022, .028)	(.0004, .0006)

SAMPLE TEMPERATURE 18.6 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.42	RNA :	1.17	AMMONIA :	.51
CARBON :	131	DNA :	3.02	NITRATE :	.33
NITROGEN :	42	PROTEIN:	23.00	SILICATE :	.95

DISCOVERY 1981

LAT 32 35.8'N LONG 31 42.2'W STATION NO. NON-T
DATE 13/05/81 DEPTH 3 M

I	P	I	P	I	P	I	P
842	.63	760	.69	583	.58	513	.56
398	.59	361	.93	189	2.07	172	2.22
131	2.12	127	2.09	104	2.16	98	2.52
74	1.79	32	1.46	21	1.98	20	1.44
13	1.03	7	.99	6	.84	4	.86

PARAMETER VALUES

PS : 2.91 ALPHA : .117 BETA : .0076

(2.60, 3.22) (.098, .135) (.0054, .0098)

SAMPLE TEMPERATURE 19.5 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL	.07	RNA	1.43	AMMONIA	.09
CARBON	210	DNA	3.12	NITRATE	.05
NITROGEN	23	PROTEIN	12.30	SILICATE	.85

DISCOVERY 1981

LAT 32 35.8'N LONG 31 42.2'W STATION NO. NON-T
DATE 13/05/81 DEPTH 3 M

I	P	I	P	I	P	I	P
986	1.69	842	2.34	842	2.06	740	2.03
575	2.31	452	2.72	452	2.44	328	2.36
271	2.26	267	2.52	131	2.36	123	2.52
88	2.25	86	2.48	63	2.27	61	2.17
45	1.82	39	2.14	27	1.56	20	1.65
13	1.49	11	1.35	8	1.61	7	1.61
5	1.65	4	1.44	2	1.18	2	1.34

PARAMETER VALUES

PS : 2.16 ALPHA : .461 BETA : .0000

(2.05, 2.27) (.368, .554) (-.0002, .0002)

SAMPLE TEMPERATURE 19.5 C INCUBATION TEMPERATURE 23.0 C

CHLOROPHYLL	: .07	RNA	: 1.43	AMMONIA	: .09
CARBON	: 210	DNA	: 3.12	NITRATE	: .05
NITROGEN	: 23	PROTEIN	: 12.30	SILICATE	: .85

DISCOVERY 1981

LAT 32 35.8'N LONG 31 42.2'W STATION NO. NON-T
DATE 13/05/81 DEPTH 3 M

I	P	I	P	I	P	I	P
962	2.15	801	2.11	637	2.13	567	2.55
485	2.96	361	2.86	353	2.66	275	2.23
172	2.54	123	2.32	100	2.83	92	2.80
76	2.64	74	2.73	57	2.15	52	2.28
32	2.01	26	2.12	18	1.66	17	1.71
12	1.48	7	1.25	6	1.33	4	1.23
3	.98						

PARAMETER VALUES

PS : 2.57 ALPHA : .199 BETA : .0003

(2.45, 2.68) (.172, .226) (0.0000, .0006)

SAMPLE TEMPERATURE 19.5 C INCUBATION TEMPERATURE 20.2 C

CHLOROPHYLL :	.07	RNA :	1.43	AMMONIA :	.09
CARBON :	210	DNA :	3.12	NITRATE :	.05
NITROGEN :	23	PROTEIN:	12.30	SILICATE :	.85

DISCOVERY 1981

LAT 33 03.0'N LONG 34 24.5'W STATION NO. 10360
DATE 14/05/81 DEPTH 30 M

I	P	I	P	I	P	I	P
962	.60	801	.69	637	.72	485	.86
361	.81	353	.81	275	.83	172	.77
123	.88	100	.84	92	.89	76	.78
74	.88	57	.70	32	.53	26	.60
18	.43	17	.40	14	.34	12	.34
6	.27	4	.23	3	.23		

PARAMETER VALUES

PS : .90 ALPHA : .033 BETA : .0003

(.86, .93) (.030, .036) (.0002, .0004)

SAMPLE TEMPERATURE 19.5 C INCUBATION TEMPERATURE 21.0 C

CHLOROPHYLL	.10	RNA	1.56	AMMONIA	.13
CARBON	84	DNA	4.24	NITRATE	.11
NITROGEN	19	PROTEIN	11.25	SILICATE	.94

DISCOVERY 1981

LAT 33 03.0'N LONG 34 24.5'W STATION NO. 10360
DATE 14/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
986	.00	830	.00	764	.06	740	.07
563	.12	402	.15	386	.09	201	.12
180	.19	135	.15	131	.19	119	.20
88	.21	71	.21	63	.19	30	.21
27	.17	21	.18	18	.19	12	.12
12	.13	6	.09	6	.09	3	.06

PARAMETER VALUES

PS : .23 ALPHA : .017 BETA : .0005

(.22, .25) (.014, .019) (.0004, .0005)

SAMPLE TEMPERATURE 18.6 C INCUBATION TEMPERATURE 18.3 C

CHLOROPHYLL :	.45	RNA :	1.01	AMMONIA :	.09
CARBON :	75	DNA :	1.90	NITRATE :	.51
NITROGEN :	22	PROTEIN:	23.50	SILICATE :	1.15

DISCOVERY 1981

LAT 33 03.0'N LONG 34 24.5'W STATION NO. 10360
DATE 14/05/81 DEPTH 150 M

T	P	I	P	I	P	I	P
942	.06	760	.12	583	.10	513	.07
308	.20	361	.12	189	.46	172	.32
74	.46	32	.50	13	.27	12	.48
6	.12	4	.38				

PARAMETER VALUES

PS :	.58	ALPHA :	.053	BETA :	.0017
(.48,	.69)	(.037,	.068)	(.0010,	.0025)

SAMPLE TEMPERATURE 18.2 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.11	RNA :	.34	AMMONIA :	.24
CARBON :	40	DNA :	1.36	NITRATE :	1.36
NITROGEN :	17	PROTEIN:	9.97	SILICATE :	1.13

DISCOVERY 1981

LAT 33 33.6'N LONG 33 32.1'W STATION NO. 10361
DATE 15/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
904	.09	731	.13	534	.24	452	.19
419	.28	394	.23	185	.20	168	.19
123	.23	115	.27	90	.25	88	.27
59	.23	53	.23	32	.31	30	.28
19	.24	15	.25	11	.13	11	.18
5	.11	5	.11	3	.11	3	.07

PARAMETER VALUES

PS : .27 ALPHA : .028 BETA : .0002

(.25, .29) (.024, .033) (.0001, .0003)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL	: .87	RNA	: 4.60	AMMONIA	: .10
CARBON	: 140	DNA	: 4.52	NITRATE	: 1.11
NITROGEN	: 42	PROTEIN:	35.50	SILICATE	: 1.11

DISCOVERY 1981

LAT 33 33.6'N LONG 33 32.1'W STATION NO. 10361
DATE 15/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
966	.12	740	.17	690	.09	518	.17
444	.15	370	.19	185	.20	123	.15
51	.19	36	.15	30	.17	20	.15
18	.14	14	.11	13	.08	6	.06
6	.08	3	.07				

PARAMETER VALUES

PS :	.19	ALPHA :	.012	BETA :	.0001
(	.17, .21)	(	.010, .014)	(	0.0000, .0001)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 28.0 C

CHLOROPHYLL :	.87	RNA :	4.60	AMMONIA :	.10
CARBON :	140	DNA :	4.52	NITRATE :	1.11
NITROGEN :	42	PROTEIN:	35.50	SILICATE :	1.11

DISCOVERY 1981

LAT 33 33.6'N LONG 33 32.1'W STATION NO. 10361
DATE 15/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
945	.10	945	.10	801	.12	748	.16
616	.24	485	.23	476	.19	411	.14
341	.12	164	.18	131	.20	100	.23
95	.23	71	.22	69	.16	55	.23
51	.25	30	.23	27	.27	17	.16
16	.21	13	.13	11	.13	6	.06
5	.06	3	.05	3	.05		

PARAMETER VALUES

PS :	ALPHA :	BETA :
.24	.018	.0002
(.22, .25)	(.015, .021)	(.0001, .0002)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL :	.87	RNA :	4.60	AMMONIA :	.10
CARBON :	140	DNA :	4.52	NITRATE :	1.11
NITROGEN :	42	PROTEIN:	35.50	SILICATE :	1.11

DISCOVERY 1981

LAT 33 33.6'N LONG 33 32.1'W STATION NO. 10361
DATE 15/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
958	.02	896	.03	670	.01	583	.09
538	.18	444	.13	316	.13	193	.36
160	.28	131	.34	108	.29	94	.36
86	.33	69	.29	40	.22	33	.26
22	.12	20	.26	16	.14	8	.07
7	.10	5	.04	5	.05		

PARAMETER VALUES

PS : .53 ALPHA : .010 BETA : .0017

(.44, .62) (.009, .012) (.0011, .0023)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 19.6 C

CHLOROPHYLL	: .87	RNA	: 4.60	AMMONIA	: .10
CARBON	: 140	DNA	: 4.52	NITRATE	: 1.11
NITROGEN	: 42	PROTEIN	: 35.50	SILICATE	: 1.11

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
740	.03	452	.08	168	.25	123	.32
88	.34	53	.32	32	.26	19	.18
11	.15	5	.10	3	.05	2	.02
1	.03						

PARAMETER VALUES

PS : .53 ALPHA : .014 BETA : .0022

(.49, .58) (.013, .015) (.0018, .0027)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	1.30	RNA :	4.03	AMMONIA :	.44
CARBON :	128	DNA :	7.72	NITRATE :	.61
NITROGEN :	41	PROTEIN:	24.15	SILICATE :	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
964	.00	740	.01	370	.07	156	.09
123	.13	88	.13	51	.16	30	.09
18	.13	13	.07	6	.04	3	.04
2	.02	1	.01				

PARAMETER VALUES

PS :	.18	ALPHA :	.009	BETA :	.0006
(.16,	.21)	(.007,	.010)	(.0004,	.0008)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 27.5 C

CHLOROPHYLL :	1.30	RNA :	4.03	AMMONIA :	.44
CARBON :	129	DNA :	7.72	NITRATE :	.61
NITROGEN :	41	PROTEIN:	24.15	SILICATE :	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
945	.03	616	.08	411	.21	164	.32
100	.35	71	.34	55	.25	30	.24
17	.16	13	.10	6	.04	3	.04
2	.03	1	.02				

PARAMETER VALUES

PS :	.56	ALPHA :	.010	BETA :	.0016
(	.48, .63)	(	.009, .011)	(	.0011, .0020)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 23.0 C

CHLOROPHYLL :	1.30	RNA :	4.03	AMMONIA :	.44
CARBON :	128	DNA :	7.72	NITRATE :	.61
NITROGEN :	41	PROTEIN:	24.15	SILICATE :	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
958	.05	583	.16	316	.21	108	.38
86	.44	64	.35	33	.27	20	.18
16	.11	7	.06	5	.04	3	.00
?	.00						

PARAMETER VALUES

PS : .63 ALPHA : .011 BETA : .0017

(.50, .76) (.009, .012) (.0010, .0025)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.5 C

CHLOROPHYLL	: 1.30	RNA	: 4.03	AMMONIA	: .44
CARBON	: 128	DNA	: 7.72	NITRATE	: .61
NITROGEN	: 41	PROTEIN	: 24.15	SILICATE	: 1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
731	.10	419	.23	185	.45	115	.59
90	.49	59	.55	30	.49	15	.34
11	.21	5	.12	3	.07	1	.04
1	.03						

PARAMETER VALUES

PS : .74 ALPHA : .028 BETA : .0020

(.68, .79) (.025, .030) (.0016, .0025)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL	.42	RNA	1.43	AMMONIA	.44
CARBON	104	DNA	2.34	NITRATE	.61
NITROGEN	36	PROTEIN	-	SILICATE	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
966	.07	518	.13	185	.28	127	.37
87	.31	54	.35	36	.26	20	.18
14	.15	6	.05	3	.05	2	.04
1	.03						

PARAMETER VALUES

PS :	.47	ALPHA :	.013	BETA :	.0011
(	.43, .51)	(	.012, .014)	(	.0008, .0013)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 27.5 C

CHLOROPHYLL :	.42	RNA :	1.43	AMMONIA :	.44
CARBON :	104	DNA :	2.34	NITRATE :	.51
NITROGEN :	36	PROTEIN:	-	SILICATE :	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
801	.09	476	.26	341	.41	131	.56
95	.51	51	.54	27	.35	16	.25
11	.13	5	.12	3	.07	2	.03
1	.04						

PARAMETER VALUES

PS :	.80	ALPHA :	.018	BETA :	.0016
(	.72, .87)	(	.016, .020)	(	.0014, .0023)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 23.0 C

CHLOROPHYLL :	.42	RNA :	1.43	AMMONIA :	.44
CARBON :	104	DNA :	2.34	NITRATE :	.61
NITROGEN :	36	PROTEIN:	-	SILICATE :	1.13

DISCOVERY 1981

LAT 33 34.8'N LONG 33 32.1'W STATION NO. 10362
DATE 15/05/81 DEPTH 56 M

I	P	I	P	I	P	I	P
670	.17	444	.37	193	.69	131	.68
94	.66	40	.44	22	.31	16	.25
8	.13	5	.14	3	.06	2	.05

PARAMETER VALUES

PS :	1.21	ALPHA :	.017	BETA :	.0033
(1.10,	1.31)	(.016,	.018)	(.0027,	.0039)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.5 C

CHLOROPHYLL :	.42	RNA :	1.43	AMMONIA :	.44
CARBON :	104	DNA :	2.34	NITRATE :	.61
NITROGEN :	36	PROTEIN:	-	SILICATE :	1.13

DISCOVERY 1981

LAT 34 00.1'N LONG 32 49.9'W STATION NO. 10364
DATE 15/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
970	.00	945	.00	723	.00	699	.04
645	.08	592	.03	501	.02	411	.05
374	.02	189	.23	164	.21	121	.29
115	.27	88	.31	82	.34	58	.31
57	.37	32	.39	28	.31	19	.32
17	.34	11	.26	11	.24	5	.17
4	.17	3	.12	3	.12		

PARAMETER VALUES

PS : .47 ALPHA : .037 BETA : .0022

(.44, .49) (.034, .040) (.0019, .0026)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL	: .62	RNA	: 3.36	AMMONIA	: .21
CARBON	: 105	DNA	: 4.76	NITRATE	: .59
NITROGEN	: 36	PROTEIN	: 24.80	SILICATE	: 1.15

DISCOVERY 1981

LAT 34 00.1'N LONG 32 49.9'W STATION NO. 10364
DATE 16/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
945	.07	871	.03	814	.05	690	.04
506	.06	522	.08	493	.07	386	.08
209	.11	164	.11	131	.12	123	.20
86	.15	24	.17	18	.18	14	.09
13	.08	5	.07	3	.05		

PARAMETER VALUES

PS : .18 ALPHA : .015 BETA : .0003

(.16, .20) (.012, .018) (.0002, .0004)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 28.0 C

CHLOROPHYLL : .62 RNA : 3.36 AMMONIA : .21

CARBON : 104 DNA : 4.76 NITRATE : .59

NITROGEN : 36 PROTEIN: 24.80 SILICATE : 1.15

DISCOVERY 1981

LAT 34 00.1'N LONG 32 49.9'W STATION NO. 10364
DATE 16/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
896	.06	826	.07	711	.07	666	.09
546	.10	452	.07	431	.11	242	.18
205	.14	174	.18	148	.20	115	.22
111	.22	80	.23	45	.20	43	.22
30	.22	19	.19	18	.19	11	.17
10	.14	6	.12	6	.11		

PARAMETER VALUES

PS : .24 ALPHA : .023 BETA : .0004

(.23, .25) (.021, .026) (.0004, .0005)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 22.5 C

CHLOROPHYLL	: .62	RNA	: 3.36	AMMONIA	: .21
CARBON	: 106	DNA	: 4.76	NITRATE	: .59
NITROGEN	: 36	PROTEIN:	24.80	SILICATE	: 1.15

DISCOVERY 1981

LAT 34 00.1'N LONG 32 49.9'W STATION NO. 10364
DATE 16/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
826	.02	731	.05	657	.06	616	.14
555	.10	411	.20	259	.19	217	.30
180	.24	148	.27	118	.33	113	.29
63	.37	49	.39	46	.34	36	.40
34	.41	24	.39	23	.33	13	.22
12	.22	8	.18	7	.17		

PARAMETER VALUES

PS : .45 ALPHA : .030 BETA : .0012

(.42, .47) (.026, .033) (.0010, .0014)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.0 C

CHLOROPHYLL	: .62	RNA	: 3.36	AMMONIA	: .21
CARBON	: 106	DNA	: 4.76	NITRATE	: .59
NITROGEN	: 36	PROTEIN	: 24.80	SILICATE	: 1.15

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
719	.09	472	.09	180	.18	135	.21
90	.31	63	.24	30	.24	13	.18
4	.08	3	.08	2	.07	1	.06

PARAMETER VALUES

PS : .30	ALPHA : .023	BETA : .0006
(.27, .32)	(.019, .027)	(.0004, .0008)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL :	.81	RNA :	3.98	AMMONIA :	.25
CARBON :	121	DNA :	5.74	NITRATE :	1.35
NITROGEN :	32	PROTEIN:	33.30	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
752	.11	361	.23	172	.25	117	.28
75	.27	55	.32	29	.29	19	.24
12	.17	6	.14	2	.11	1	.09
1	.08						

PARAMETER VALUES

PS :	.31	ALPHA :	.030	BETA :	.0004
(.29,	.34)	(.025,	.035)	(.0003,	.0005)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL :	.91	RNA :	3.98	AMMONIA :	.25
CARBON :	121	DNA :	5.74	NITRATE :	1.35
NITROGEN :	32	PROTEIN:	33.30	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
707	.15	452	.17	176	.19	127	.27
82	.30	66	.27	34	.25	21	.25
16	.21	8	.18	5	.14	3	.13
2	.12						

PARAMETER VALUES

PS : .28 ALPHA : .038 BETA : .0003

(.26, .29) (.032, .044) (.0002, .0004)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 25.9 C

CHLOROPHYLL :	.81	RNA :	3.98	AMMONIA :	.25
CARBON :	121	DNA :	5.74	NITRATE :	1.35
NITROGEN :	32	PROTEIN:	33.30	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	T	P	I	P	I	P
723	.15	444	.20	180	.21	127	.29
99	.32	69	.31	28	.26	20	.25
11	.18	6	.12	5	.07	4	.09

PARAMETER VALUES

PS : .33 ALPHA : .021 BETA : .0004

(.31, .35) (.019, .024) (.0003, .0005)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL :	.81	RNA :	3.98	AMMONIA :	.25
CARBON :	121	DNA :	5.74	NITRATE :	1.35
NITROGEN :	32	PROTEIN:	33.30	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
904	.03	476	.07	361	.11	154	.18
119	.20	86	.22	65	.18	31	.17
15	.14	11	.10	4	.06	3	.04
2	.05	1	.03				

PARAMETER VALUES

PS :	.25	ALPHA :	.012	BETA :	.0006
(	.24, .27)	(	.011, .014)	(	.0005, .0007)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL :	.55	RNA :	1.07	AMMONIA :	.25
CARBON :	88	DNA :	1.59	NITRATE :	1.35
NITROGEN :	33	PROTEIN:	-	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
884	.10	472	.31	164	.25	119	.29
87	.30	34	.31	20	.18	13	.14
7	.09	3	.07	2	.06	1	.06

PARAMETER VALUES

PS : .33 ALPHA : .016 BETA : .0003

(.30, .37) (.013, .020) (.0002, .0004)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 18.0 C

CHLOROPHYLL	.55	RNA	1.07	AMMONIA	.25
CARBON	88	DNA	1.59	NITRATE	1.35
NITROGEN	33	PROTEIN	-	SILICATE	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
575	.14	294	.17	164	.19	85	.20
60	.22	23	.13	14	.12	8	.09
4	.10	3	.08	2	.08		

PARAMETER VALUES

PS : .21	ALPHA : .016	BETA : .0001
(.18, .23)	(.013, .020)	(0.0000, .0002)

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 25.0 C

CHLOROPHYLL :	.55	RNA :	1.07	AMMONIA :	.25
CARBON :	88	DNA :	1.59	NITRATE :	1.35
NITROGEN :	33	PROTEIN:	-	SILICATE :	1.37

DISCOVERY 1981

LAT 33 31.9'N LONG 33 32.3'W STATION NO. 10365
DATE 16/05/81 DEPTH 43 M

I	P	I	P	I	P	I	P
760	.12	483	.16	209	.27	105	.29
74	.33	45	.26	26	.20	22	.18
10	.13	7	.15	5	.11	4	.08

PARAMETER VALUES

PS :	ALPHA :	BETA :
.34	.016	.0005
(.31, .38)	(.013, .018)	(.0003, .0006)

SAMPLE TEMPERATURE 16.8 C INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL :	.55	RNA :	1.07	AMMONIA :	.25
CARBON :	88	DNA :	1.59	NITRATE :	1.35
NITROGEN :	33	PROTEIN:	-	SILICATE :	1.37

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

T	P	I	P	I	P	I	P
845	.24	526	.55	79	.54	63	.40
34	.48	17	.31	5	.29	3	.23
2	.22	1	.19				

PARAMETER VALUES

PS : .46	ALPHA : .096	BETA : .0001
(.40, .52)	(.062, .131)	(0.0000, .0003)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.22	RNA :	1.14	AMMONIA :	.12
CARBON :	71	DNA :	2.16	NITRATE :	.19
NITROGEN :	-	PROTEIN:	32.10	SILICATE :	.89

DTSCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
921	.54	458	.40	179	.59	82	.40
65	.47	31	.38	19	.43	6	.22
3	.20	2	.14	2	.13		

PARAMETER VALUES

PS : .47 ALPHA : .052 BETA : .0000

(.43, .51) (.039, .066) (-.0001, .0001)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 18.2 C

CHLOROPHYLL	: .22	RNA	: 1.14	AMMONIA	: .12
CARBON	: 71	DNA	: 2.16	NITRATE	: .19
NITROGEN	: -	PROTEIN	: 32.10	SILICATE	: .89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
709	.23	494	.21	247	.33	171	.32
131	.35	109	.39	26	.38	10	.27
6	.29	4	.20	3	.20		

PARAMETER VALUES

PS : .39 ALPHA : .065 BETA : .0004

(.37, .42) (.057, .073) (.0003, .0005)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL	: .22	RNA	: 1.14	AMMONIA	: .12
CARBON	: 71	DNA	: 2.16	NITRATE	: .19
NITROGEN	: -	PROTEIN	: 32.10	SILICATE	: .89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10369
DATE 20/05/81 DEPTH 110 M

T	P	T	P	T	P	T	P
477	.07	466	.24	243	.32	207	.35
147	.34	27	.36	10	.31	5	.21
3	.11						

PARAMETER VALUES

PS : .45	ALPHA : .044	BETA : .0008
(.40, .50)	(.036, .053)	(.0005, .0011)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 20.5 C

CHLOROPHYLL :	.22	RNA :	1.14	AMMONIA :	.12
CARBON :	71	DNA :	2.16	NITRATE :	.19
NITROGEN :	-	PROTEIN:	32.10	SILICATE :	.89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10369
DATE 20/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
996	.04	665	.04	538	.15	275	.25
195	.45	60	.37	32	.43	23	.26
11	.23	7	.21	5	.09	4	.07

PARAMETER VALUES

PS : .61	ALPHA : .021	BETA : .0017
(.48, .74)	(.017, .025)	(.0009, .0025)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.12	RNA :	.71	AMMONIA :	.12
CARBON :	40	DNA :	1.23	NITRATE :	.19
NITROGEN :	-	PROTEIN:	8.35	SILICATE :	.89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
964	.07	717	.07	470	.18	207	.25
135	.28	75	.30	67	.32	33	.32
17	.23	11	.22	4	.13	2	.12
2	.08	1	.07				

PARAMETER VALUES

PS : .34	ALPHA : .034	BETA : .0006
(.33, .36)	(.030, .038)	(.0005, .0007)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 18.2 C

CHLOROPHYLL : .12	RNA : .71	AMMONIA : .12
CARBON : 40	DNA : 1.23	NITRATE : .19
NITROGEN : -	PROTEIN: 8.35	SILICATE : .89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

T	P	T	P	I	P	I	P
897	.09	558	.18	179	.27	139	.25
67	.22	32	.16	19	.15	13	.15
6	.10	3	.12	2	.08		

PARAMETER VALUES

PS : .26 ALPHA : .016 BETA : .0002

(.23, .30) (.011, .020) (.0001, .0004)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL :	.12	RNA :	.71	AMMONIA :	.12
CARBON :	40	DNA :	1.23	NITRATE :	.19
NITROGEN :	-	PROTEIN:	8.35	SILICATE :	.89

DISCOVERY 1981

LAT 32 07.2'N LONG 27 57.8'W STATION NO. 10368
DATE 20/05/81 DEPTH 110 M

I	P	I	P	I	P	I	P
988	.12	645	.12	438	.20	231	.27
105	.27	24	.27	16	.23	8	.21
5	.15	3	.18	3	.16		

PARAMETER VALUES

PS : .28 ALPHA : .051 BETA : .0003

(.26, .30) (.042, .060) (.0002, .0003)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.5 C

CHLOROPHYLL :	.12	RNA :	.71	AMMONIA :	.12
CARBON :	40	DNA :	1.23	NITRATE :	.19
NITROGEN :	-	PROTEIN:	8.35	SILICATE :	.89

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
845	.08	526	.12	79	.24	63	.25
34	.24	17	.20	12	.13	5	.09
3	.08	2	.06	1	.05		

PARAMETER VALUES

PS : .27	ALPHA : .020	BETA : .0004
(.25, .29)	(.017, .022)	(.0003, .0005)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.79	RNA :	3.96	AMMONIA :	.11
CARBON :	198	DNA :	5.50	NITRATE :	.42
NITROGEN :	19	PROTEIN:	32.50	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
921	.12	458	.10	135	.20	82	.22
65	.23	31	.23	19	.21	12	.17
6	.12	3	.10	2	.09	2	.05

PARAMETER VALUES

PS :	ALPHA :	BETA :
.24	.028	.0003
(.22, .25)	(.024, .032)	(.0002, .0004)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 18.8 C

CHLOROPHYLL :	.79	RNA :	3.96	AMMONIA :	.11
CARBON :	198	DNA :	5.50	NITRATE :	.42
NITROGEN :	19	PROTEIN:	32.50	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
709	.06	494	.09	247	.17	171	.21
109	.19	17	.28	6	.22	3	.14

PARAMETER VALUES

PS :	.29	ALPHA :	.061	BETA :	.0007
(	.27, .31)	(	.052, .071)	(	.0005, .0008)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 25.5 C

CHLOROPHYLL :	.79	RNA :	3.96	AMMONIA :	.11
CARBON :	198	DNA :	5.50	NITRATE :	.42
NITROGEN :	18	PROTEIN:	32.50	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
466	.09	207	.22	147	.22	99	.26
46	.28	27	.30	21	.21	10	.21
7	.13	5	.10	3	.07		

PARAMETER VALUES

PS :	.33	ALPHA :	.024	BETA :	.0008
(	.31, .36)	(	.022, .027)	(	.0006, .0011)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL :	.79	RNA :	3.96	AMMONIA :	.11
CARBON :	198	DNA :	5.50	NITRATE :	.42
NITROGEN :	18	PROTEIN:	32.50	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
964	.03	717	.04	470	.05	207	.21
135	.24	67	.21	33	.22	17	.14
11	.12	4	.06	2	.04	2	.04
1	.03						

PARAMETER VALUES

PS : .34 ALPHA : .012 BETA : .0010

(.30, .38) (.011, .013) (.0007, .0013)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.40	RNA :	1.14	AMMONIA :	.11
CARBON :	-	DNA :	2.09	NITRATE :	.42
NITROGEN :	-	PROTEIN:	-	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

T	P	T	P	I	P	I	P
897	.04	558	.08	179	.16	139	.20
82	.25	67	.25	32	.24	19	.18
13	.17	6	.10	3	.05	3	.05
2	.04						

PARAMETER VALUES

PS : .29 ALPHA : .018 BETA : .0008

(.28, .31) (.017, .020) (.0007, .0009)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 18.8 C

CHLOROPHYLL :	.40	RNA :	1.14	AMMONIA :	.11
CARBON :	-	DNA :	2.09	NITRATE :	.42
NITROGEN :	-	PROTEIN:	-	SILICATE :	1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
645	.08	438	.15	231	.14	167	.22
131	.27	105	.37	8	.32	5	.29
3	.20	3	.20				

PARAMETER VALUES

PS : .43	ALPHA : .076	BETA : .0015
(.36, .50)	(.063, .090)	(.0008, .0021)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 25.5 C

CHLOROPHYLL	: .40	RNA	: 1.14	AMMONIA	: .11
CARBON	: -	DNA	: 2.09	NITRATE	: .42
NITROGEN	: -	PROTEIN	: -	SILICATE	: 1.10

DISCOVERY 1981

LAT 32 23.1'N LONG 33 31.2'W STATION NO. 10371
DATE 22/05/81 DEPTH 79 M

I	P	I	P	I	P	I	P
996	.22	665	.19	538	.18	195	.30
143	.17	117	.27	60	.29	23	.26
11	.15	7	.10	5	.08	4	.07

PARAMETER VALUES

PS :	ALPHA :	BETA :
.27	.020	.0001
(.24, .30)	(.015, .025)	(0.0000, .0002)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL :	.40	RNA :	1.14	AMMONIA :	.11
CARBON :	-	DNA :	2.09	NITRATE :	.42
NITROGEN :	-	PROTEIN:	-	SILICATE :	1.10

DISCOVERY 1981

LAT 34 05.7'N LONG 34 37.2'W STATION NO. 10372
DATE 23/05/81 DEPTH 67 M

I	P	I	P	I	P	I	P
996	.00	924	.00	789	.10	697	.13
637	.18	578	.06	486	.13	454	.11
247	.30	203	.43	155	.44	131	.34
87	.45	83	.36	67	.44	62	.40
36	.45	30	.40	19	.34	17	.36
12	.25	6	.19	6	.19	4	.17
4	.14						

PARAMETER VALUES

PS : .52 ALPHA : .035 BETA : .0013

(.49, .56) (.030, .039) (.0010, .0015)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL	: .68	RNA	: 1.36	AMMONIA	: .15
CARBON	: 73	DNA	: 3.54	NITRATE	: 1.25
NITROGEN	: 16	PROTEIN	: 9.88	SILICATE	: 1.17

DISCOVERY 1981

LAT 34 05.7'N LONG 34 37.2'W STATION NO. 10372
DATE 23/05/81 DEPTH 67 M

I	P	I	P	I	P	I	P
996	.27	924	.27	789	.24	697	.30
637	.21	578	.28	486	.26	454	.23
155	.24	131	.19	87	.21	83	.20
67	.22	62	.20	36	.15	30	.15
17	.13	12	.14	12	.10	6	.11
6	.11	4	.11				

PARAMETER VALUES

PS :	.24	ALPHA :	.012	BETA :	.0000
(.22,	.26)	(.009,	.014)	(0.0000,	0.0000)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL :	.68	RNA :	1.36	AMMONIA :	.15
CARBON :	73	DNA :	3.54	NITRATE :	1.25
NITROGEN :	15	PROTEIN:	9.88	SILICATE :	1.17

DISCOVERY 1981

LAT 34 05.7'N LONG 34 37.2'W STATION NO. 10372
DATE 23/05/81 DEPTH 67 M

I	P	I	P	I	P	I	P
924	1.07	789	1.09	697	1.00	637	.92
578	1.10	486	.97	454	.94	247	.89
203	.85	155	.77	131	.73	87	.86
83	.80	67	.76	62	.83	36	.83
19	.74	17	.75	12	.60	6	.48
6	.55						

PARAMETER VALUES

PS : .90 ALPHA : .098 BETA : .0000

(.85, .94) (.079, .116) (-.0001, .0001)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL	: .58	RNA	: 1.36	AMMONIA	: .15
CARBON	: 73	DNA	: 3.54	NITRATE	: 1.25
NITROGEN	: 16	PROTEIN	: 9.88	SILICATE	: 1.17

DISCOVERY 1981

LAT 34 05.7'N LONG 34 37.2'W STATION NO. 10372
DATE 23/05/81 DEPTH 67 M

T	P	I	P	I	P	I	P
976	.16	777	.20	745	.15	637	.28
486	.22	243	.42	143	.40	143	.44
99	.44	98	.48	72	.50	65	.50
38	.49	21	.51	21	.56	12	.47
12	.49	7	.36	7	.26	4	.26
4	.21						

PARAMETER VALUES

PS : .55 ALPHA : .072 BETA : .0008

(.53, .57) (.065, .079) (.0007, .0009)

SAMPLE TEMPERATURE 18.5 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL	.68	RNA	1.36	AMMONIA	.15
CARBON	73	DNA	3.54	NITRATE	1.25
NITROGEN	10	PROTEIN	9.88	SILICATE	1.17

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
825	.16	498	.18	235	.28	96	.23
73	.25	22	.22	14	.21	6	.18
3	.11	2	.12	2	.09		

PARAMETER VALUES

PS :	.25	ALPHA :	.043	BETA :	.0001
(.24,	.27)	(.037,	.049)	(.0001,	.0002)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.62	RNA :	2.85	AMMONIA :	.11
CARBON :	70	DNA :	3.67	NITRATE :	.98
NITROGEN :	14	PROTEIN:	16.93	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
877	.06	482	.20	219	.23	123	.29
99	.28	62	.32	36	.31	24	.30
16	.25	7	.20	4	.15	3	.12
2	.10						

PARAMETER VALUES

PS : .34	ALPHA : .039	BETA : .0005
(.32, .35)	(.036, .043)	(.0004, .0006)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 18.2 C

CHLOROPHYLL :	.62	RNA :	2.85	AMMONIA :	.11
CARBON :	70	DNA :	3.67	NITRATE :	.98
NITROGEN :	14	PROTEIN:	16.93	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
741	.09	518	.13	179	.15	123	.18
103	.18	48	.19	17	.16	10	.12
5	.13	4	.12	3	.10		

PARAMETER VALUES

PS :	.19	ALPHA :	.033	BETA :	.0001
(.18,	.20)	(.029,	.038)	(.0001,	.0002)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 2.5 C

CHLOROPHYLL :	.62	RNA :	2.85	AMMONIA :	.11
CARBON :	70	DNA :	3.67	NITRATE :	.98
NITROGEN :	14	PROTEIN:	16.93	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
956	.09	685	.06	486	.15	267	.23
191	.27	123	.27	84	.26	47	.27
25	.29	19	.27	11	.19	7	.13
5	.14	4	.10				

PARAMETER VALUES

PS : .32 ALPHA : .027 BETA : .0005

(.30, .34) (.024, .030) (.0004, .0006)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.3 C

CHLOROPHYLL	: .62	RNA	: 2.85	AMMONIA	: .11
CARBON	: 70	DNA	: 3.67	NITRATE	: .98
NITROGEN	: 14	PROTEIN	: 16.93	SILICATE	: .84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
737	.01	494	.03	175	.16	139	.18
98	.27	63	.35	32	.36	19	.27
11	.25	6	.17	3	.15	2	.10
?	.10						

PARAMETER VALUES

PS : .47	ALPHA : .035	BETA : .0028
(.42, .52)	(.032, .039)	(.0020, .0036)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.5 C

CHLOROPHYLL :	.45	RNA :	.65	AMMONIA :	.11
CARBON :	65	DNA :	2.00	NITRATE :	.98
NITROGEN :	12	PROTEIN:	-	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

T	P	T	P	T	P	T	P
893	.09	621	.14	215	.22	98	.33
66	.39	23	.38	14	.33	8	.20
4	.16	3	.13	2	.11		

PARAMETER VALUES

PS : .42	ALPHA : .043	BETA : .0009
(.39, .44)	(.038, .047)	(.0007, .0010)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 18.2 C

CHLOROPHYLL :	.46	RNA :	.85	AMMONIA :	.11
CARBON :	65	DNA :	2.00	NITRATE :	.98
NITROGEN :	12	PROTEIN:	-	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

T	P	I	P	I	P	I	P
996	.12	693	.12	470	.14	231	.27
155	.29	123	.27	98	.27	45	.26
17	.26	8	.18	5	.14	4	.13
3	.13						

PARAMETER VALUES

PS :	.30	ALPHA :	.037	BETA :	.0003
(.29,	.32)	(.032,	.042)	(.0003,	.0004)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 25.0 C

CHLOROPHYLL :	.46	RNA :	.85	AMMONIA :	.11
CARBON :	65	DNA :	2.00	NITRATE :	.98
NITROGEN :	12	PROTEIN:	-	SILICATE :	.84

DISCOVERY 1981

LAT 35 21.7'N LONG 35 28.6'W STATION NO. 10373
DATE 24/05/81 DEPTH 86 M

I	P	I	P	I	P	I	P
805	.13	590	.12	306	.24	207	.38
147	.36	109	.43	62	.41	35	.39
23	.30	12	.26	8	.19	6	.18
5	.13						

PARAMETER VALUES

PS : .50 ALPHA : .027 BETA : .0010

(.47, .54) (.024, .031) (.0008, .0012)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 20.3 C

CHLOROPHYLL :	.46	RNA :	.85	AMMONIA :	.11
CARBON :	65	DNA :	2.00	NITRATE :	.98
NITROGEN :	12	PROTEIN:	-	SILICATE :	.84

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
885	.10	617	.11	155	.34	105	.35
81	.30	39	.26	21	.19	14	.14
6	.10	4	.06	3	.06	2	.06

PARAMETER VALUES

PS : .43 ALPHA : .013 BETA : .0008

(.39, .46) (.011, .014) (.0006, .0010)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL :	.90	RNA :	2.65	AMMONIA :	.26
CARBON :	129	DNA :	5.18	NITRATE :	.36
NITROGEN :	15	PROTEIN:	14.80	SILICATE :	.43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
869	.06	510	.11	223	.28	151	.34
96	.31	71	.30	35	.33	22	.34
14	.24	8	.12	4	.11	3	.07
2	.05						

PARAMETER VALUES

PS :	.40	ALPHA :	.026	BETA :	.0009
(	.37, .44)	(	.022, .029)	(	.0006, .0011)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.90	RNA :	2.65	AMMONIA :	.26
CARBON :	128	DNA :	5.18	NITRATE :	.36
NITROGEN :	15	PROTEIN:	14.80	SILICATE :	.43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
813	.03	645	.08	275	.17	167	.24
88	.25	52	.23	25	.15	16	.14
7	.10	5	.08	4	.06	3	.05

PARAMETER VALUES

PS : .32 ALPHA : .011 BETA : .0008

(.29, .36) (.010, .013) (.0006, .0010)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 24.2 C

CHLOROPHYLL	: .90	RNA	: 2.65	AMMONIA	: .26
CARBON	: 129	DNA	: 5.18	NITRATE	: .36
NITROGEN	: 15	PROTEIN	: 14.80	SILICATE	: .43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
733	.07	558	.14	255	.24	179	.28
123	.35	87	.33	44	.29	27	.29
18	.26	10	.14	7	.10	5	.08
4	.07						

PARAMETER VALUES

PS : .42	ALPHA : .019	BETA : .0009
(.39, .44)	(.017, .020)	(.0007, .0011)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 21.0 C

CHLOROPHYLL :	.90	RNA :	2.65	AMMONIA :	.26
CARBON :	128	DNA :	5.18	NITRATE :	.36
NITROGEN :	15	PROTEIN:	14.80	SILICATE :	.43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
713	.06	462	.13	199	.41	159	.44
113	.52	79	.45	34	.35	18	.29
12	.19	6	.10	3	.11	3	.09
2	.07						

PARAMETER VALUES

PS : .82 ALPHA : .018 BETA : .0030

(.71, .92) (.016, .020) (.0022, .0039)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL	: .60	RNA	: 1.94	AMMONIA	: .26
CARBON	: 42	DNA	: 2.19	NITRATE	: .36
NITROGEN	: 11	PROTEIN	: -	SILICATE	: .43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
617	.14	207	.31	155	.49	97	.53
72	.51	27	.44	19	.38	15	.30
6	.19	4	.15	2	.15	2	.11

PARAMETER VALUES

PS :	.66	ALPHA :	.033	BETA :	.0018
(.60,	.72)	(.029,	.036)	(.0012,	.0023)

SAMPLE TEMPERATURE 16.0 C INCUBATION TEMPERATURE 17.8 C

CHLOROPHYLL :	.60	PNA :	1.94	AMMONIA :	.26
CARBON :	42	DNA :	2.19	NITRATE :	.36
NITROGEN :	11	PROTEIN:	-	SILICATE :	.43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

T	P	T	P	I	P	I	P
745	.08	490	.13	239	.31	104	.33
76	.35	40	.31	24	.22	15	.22
7	.17	5	.16	3	.15	3	.09

PARAMETER VALUES

PS :	.38	ALPHA :	.025	BETA :	.0007
(	.34, .43)	(	.020, .029)	(	.0005, .0010)

SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 24.2 C

CHLOROPHYLL :	.60	RNA :	1.94	AMMONIA :	.26
CARBON :	42	DNA :	2.19	NITRATE :	.36
NITROGEN :	11	PROTEIN:	-	SILICATE :	.43

DISCOVERY 1981

LAT 34 31.2'N LONG 35 18.9'W STATION NO. 10375
DATE 25/05/81 DEPTH 60 M

I	P	I	P	I	P	I	P
789	.10	582	.25	267	.43	191	.49
123	.53	86	.42	49	.39	31	.44
20	.38	11	.21	7	.19	5	.13
4	.11						

PARAMETER VALUES

PS : .58 ALPHA : .026 BETA : .0009

(.52, .63) (.022, .030) (.0006, .0012)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 21.0 C

CHLOROPHYLL :	.60	RNA :	1.94	AMMONIA :	.26
CARBON :	42	DNA :	2.19	NITRATE :	.36
NITROGEN :	11	PROTEIN:	-	SILICATE :	.43

DISCOVERY 1981

LAT 33 34.2'N LONG 33 29.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

T	P	I	P	I	P	I	P
885	.08	617	.19	243	.24	105	.29
81	.29	39	.31	21	.27	14	.20
6	.14	4	.09	3	.06	2	.03

PARAMETER VALUES

PS : .33 ALPHA : .025 BETA : .0004

(.32, .35) (.022, .027) (.0004, .0005)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL :	.38	RNA :	1.98	AMMONIA :	.13
CARBON :	43	DNA :	2.70	NITRATE :	.32
NITROGEN :	-	PROTEIN:	18.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 34.2'N LONG 33 28.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

I	P	I	P	I	P	I	P
869	.07	510	.20	151	.23	96	.40
71	.36	35	.29	22	.28	14	.25
8	.15	4	.08	3	.04	2	.01

PARAMETER VALUES

PS :	ALPHA :	BETA :
.41	.022	.0007
(.37, .45)	(.018, .026)	(.0005, .0010)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL :	.33	RNA :	1.98	AMMONIA :	.13
CARBON :	43	DNA :	2.70	NITRATE :	.32
NITROGEN :	-	PROTEIN:	18.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 34.2'N
DATE 26/05/81

LONG 33 28.0'W

STATION NO. 10376
DEPTH 45 M

I	P	I	P	I	P	I	P
813	.15	645	.18	275	.27	167	.29
114	.39	25	.37	16	.34	7	.21
5	.18	4	.13	3	.13		

PARAMETER VALUES

PS : .41 (.39, .43)

ALPHA : .043 (.039, .047)

BETA : .0005 (.0005, .0006)

SAMPLE TEMPERATURE 19.0 C

INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL	: .38	RNA	: 1.98	AMMONIA	: .13
CARBON	: 43	DNA	: 2.70	NITRATE	: .32
NITROGEN	: -	PROTEIN	: 18.45	SILICATE	: 1.06

DISCOVERY 1981

LAT 33 34.2'N
DATE 26/05/81

LONG 33 28.0'W

STATION NO. 10376
DEPTH 45 M

I	P	I	P	I	P	I	P
733	.22	255	.34	179	.39	123	.39
57	.40	27	.45	18	.28	10	.21
7	.21	5	.10	4	.02		

PARAMETER VALUES

PS : .46
(.42, .51)

ALPHA : .029
(.024, .033)

BETA : .0005
(.0003, .0007)

SAMPLE TEMPERATURE 19.0 C

INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL : .38
CARBON : 43
NITROGEN : -

RNA : 1.98
DNA : 2.70
PROTEIN: 18.45

AMMONIA : .13
NITRATE : .32
SILICATE : 1.06

DISCOVERY 1981

LAT 33 34.2'N LONG 33 28.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

T	P	I	P	I	P	I	P
713	.08	462	.20	199	.43	159	.55
113	.60	79	.66	34	.40	18	.35
12	.23	6	.11	3	.11	3	.08
2	.07						

PARAMETER VALUES

PS :	.98	ALPHA :	.022	BETA :	.0036
(	.88, 1.09)	(	.020, .023)	(	.0027, .0044)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 15.0 C

CHLOROPHYLL :	.51	RNA :	1.69	AMMONIA :	.13
CARBON :	80	DNA :	2.38	NITRATE :	.32
NITROGEN :	21	PROTEIN:	9.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 34.2'N LONG 33 28.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

I	P	I	P	I	P	I	P
617	.32	207	.71	155	.81	97	.77
72	.77	27	.56	19	.35	15	.34
6	.26	4	.14	2	.11	2	.09

PARAMETER VALUES

PS : 1.04	ALPHA : .029	BETA : .0019
(.97, 1.11)	(.027, .031)	(.0015, .0024)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL :	.51	RNA :	1.69	AMMONIA :	.13
CARBON :	80	DNA :	2.38	NITRATE :	.32
NITROGEN :	21	PROTEIN:	9.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 34.2'N LONG 33 28.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

T	P	T	P	I	P	I	P
745	.35	400	.37	239	.59	151	.60
76	.54	40	.32	24	.35	15	.30
7	.18	5	.18	3	.13	3	.11

PARAMETER VALUES

PS :	.65	ALPHA :	.020	BETA :	.0006
(.57,	.74)	(.017,	.024)	(.0003,	.0009)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 24.0 C

CHLOROPHYLL :	.51	RNA :	1.69	AMMONIA :	.13
CARBON :	80	DNA :	2.38	NITRATE :	.32
NITROGEN :	21	PROTEIN:	9.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 34.2'N LONG 33 28.0'W STATION NO. 10376
DATE 26/05/81 DEPTH 45 M

I	P	I	P	I	P	I	P
769	.25	582	.44	267	.71	123	.75
96	.80	49	.63	31	.49	20	.39
11	.24	7	.19	5	.15	4	.12

PARAMETER VALUES

PS :	ALPHA :	BETA :
1.02	.024	.0016
(.97, 1.08)	(.023, .026)	(.0014, .0018)

SAMPLE TEMPERATURE 19.0 C INCUBATION TEMPERATURE 22.0 C

CHLOROPHYLL :	.51	RNA :	1.69	AMMONIA :	.13
CARBON :	80	DNA :	2.38	NITRATE :	.32
NITROGEN :	21	PROTEIN:	9.45	SILICATE :	1.06

DISCOVERY 1981

LAT 33 10.9'N LONG 33 22.7'W STATION NO. 10376
DATE 27/05/81 DEPTH 87 M

I	P	I	P	I	P	I	P
693	.03	490	.05	199	.14	118	.19
92	.21	12	.20	6	.14	3	.05
2	.05	2	.04				

PARAMETER VALUES

PS : .30 ALPHA : .026 BETA : .0011

(.28, .33) (.024, .028) (.0009, .0014)

SAMPLE TEMPERATURE 21.0 C INCUBATION TEMPERATURE 16.0 C

CHLOROPHYLL :	1.20	RNA :	3.78	AMMONIA :	.69
CARBON :	57	DNA :	6.82	NITRATE :	1.15
NITROGEN :	14	PROTEIN:	26.09	SILICATE :	1.12

DISCOVERY 1981

LAT 33 10.9'N LONG 33 22.7'W STATION NO. 10376
DATE 27/05/81 DEPTH 87 M

I	P	I	P	I	P	I	P
964	.02	621	.03	446	.07	183	.13
123	.13	90	.08	66	.09	30	.04
16	.03	11	.03	5	.04	3	.03
2	.04	2	.05				

PARAMETER VALUES

PS :	.35	ALPHA :	.002	BETA :	.0012
(-.23,	.93)	(.002,	.003)	(-.0018,	.0043)

SAMPLE TEMPERATURE 21.0 C INCUBATION TEMPERATURE 19.0 C

CHLOROPHYLL :	1.20	RNA :	3.78	AMMONIA :	.69
CARBON :	57	DNA :	6.82	NITRATE :	1.15
NITROGEN :	14	PROTEIN:	26.09	SILICATE :	1.12